Application No.: 09/903374 Docket No.: ATA-297RCE

IN THE CLAIMS:

1. (Currently Amended) A prosthesis for surgical implantation to replace a segment of a blood vessel, the prosthesis comprising:

a first tube of biologically compatible material having an exterior surface,

a membrane of polymer material ~~positioned~~ wrapped about the exterior surface of the first tube, and

at least one support structure wound along a winding axis about an exterior surface of the membrane to form axially spaced-apart ridges on the membrane that enable the biologically compatible material to substantially close a hole that is created when the biologically compatible material is punctured by a needle or cannula, the membrane having a microstructure of nodes interconnected by fibrils effective to facilitate bonding of the support structure to the membrane and inhibit delamination of the support structure from the membrane;

~~wherein the ridges are spaced apart a distance effective to direct a needle to a puncture site at an angle that inhibits needle plowing and hole enlarging, the spaced apart distance being approximately less than or equal to 1.5 times the outer diameter of the needle.~~

2. (Original) The prosthesis of claim 1, wherein the support structure includes a metal wire.

3. (Original) The prosthesis of claim 1 further comprising an outer polymer membrane placed over the support structure, the membrane, and the first tube, the outer polymer membrane bonding to the membrane and enclosing the ridges.

4. (Canceled)

5. (Original) The prosthesis of claim 1, wherein the first tube, the membrane, and the support structure are coalesced by heat.

6. (Original) The prosthesis of claim 1, wherein substantially all the nodes forming the microstructure of the membrane are oriented at angle relative to the winding axis of the support structure, the angle being other than 0° relative to the winding axis.

7. (Original) The prosthesis of claim 1, wherein substantially all the nodes forming the microstructure of the membrane are oriented in a direction substantially perpendicular to the winding axis of the support structure.

8. (Original) The prosthesis of claim 1, wherein the first tube is constructed from a polymer material having a microstructure of nodes interconnected by fibrils, the nodes forming the membrane being smaller than the nodes forming the first tube.

9. (Original) The prosthesis of claim 8, wherein the nodes forming the membrane are at least 10% smaller than the nodes forming the first tube.

Claims 10-11 (canceled)

12. (Currently Amended) A method of making a prosthesis, the method comprising:

providing a first tube of biologically compatible material having an exterior surface,

~~positioning~~ wrapping a membrane of polymer material about the exterior surface of the first tube, and

winding at least one support structure along a winding axis about an exterior surface of the membrane to form axially spaced-apart ridges on the exterior surface that enable the biologically compatible material to substantially close a hole that is created when the biologically compatible material is punctured by a needle or cannula and ~~the ridges being apart a distance effective to direct a needle to a puncture site at an angle that inhibits needle plowing and hole enlarging, the spaced apart distance being less than 1.5 times the outer diameter of the needle~~, the membrane having a microstructure of nodes interconnected by fibrils effective to facilitate bonding of the support structure to the membrane and inhibit delamination of the support structure from the membrane.

13. (Previously Presented) The prosthesis of claim 1, wherein the membrane is wrapped along the winding axis of the support structure.

14. (Previously Presented) The prosthesis of claim 1, wherein the membrane is helically wrapped along the winding axis of the support structure.

15. (Previously Presented) The prosthesis of claim 1, wherein the membrane is spirally wrapped along the winding axis of the support structure.

16. (New) The prosthesis of claim 1, wherein the ridges are spaced apart a distance effective to direct a needle to a puncture site at an angle that inhibits needle plowing and hole enlarging, the

spaced apart distance being approximately less than or equal to 1.5 times the outer diameter of the needle.

17. (New) The method of claim 12, wherein, in the winding step, the ridges are spaced apart a distance effective to direct a needle to a puncture site at an angle that inhibits needle plowing and hole enlarging, the spaced apart distance being less than 1.5 times the outer diameter of the needle.

18. (New) The prosthesis of claim 1, wherein the support structure is a bead of solid, non-porous polytetrafluoroethylene.

19. (New) The method of claim 12, wherein, in the wrapping step, the membrane is wrapped along the winding axis of the support structure.

20. (New) The prosthesis of claim 1, wherein the first tube has an interior surface defining a lumen for blood received from said blood vessel.

21. (New) The method of claim 12, wherein the first tube of the providing step has an interior surface defining a lumen for blood received from said blood vessel.